1852MNRAS..13....6S

as the sun at the surface of the earth is not able to melt our glaciers, which yet possess a certainly higher temperature. Cold, and other unknown causes, may have absorbed and fixed all the atmosphere which anciently existed, as we see that the immense atmosphere which anciently surrounded the earth has been fixed by several chemical processes and reduced to its actual composition; and it might be possible that this actually existing atmosphere of ours should be all solidified, either by cold or chemical processes, if the earth arrives at the same degree of cold which seems to have place on the moon.

"These are some of the conclusions to which we have arrived in our inquiry into the solar and lunar constitution; they do not certainly belong to astronomy strictly taken, but, a recreation from more serious occupations may be excused to astronomers dwelling in the pure climate of Italy. I trust you will receive them as a token of my gratitude, and of interest for the work which you have published."

In a later letter Professor Secchi tells Captain Manners "that the observatory of the Collegio Romano is about to be furnished with a large refractor equatoreally mounted. The refractor will have 9 inches aperture, and a focal length of 14 French feet." There is only a little hesitation at present as to the best mode of mounting this telescope.

Observations Héliothermiques, par Sig. Secchi.

(*Comptes Rendus, Oct.* 26, 1852.)

Since the date of the preceding communication, Sig. Secchi has made the following interesting experiments on the heat emitted by different parts of the solar disc. It appeared from the former experiments that the heat increased from the margin of the solar disc to the centre; but there was this peculiarity, that when it was measured in the direction of the axis of the sun's rotation, it attained its maximum intensity at a point situate about 3′ above the centre. At the time when the former experiments were made, the projection of the sun's equator upon his disc passed above his centre, at a distance agreeing almost exactly with the position of maximum temperature; whence the conclusion naturally suggested itself to Sig. Secchi, that the equatoreal regions of the sun are intrinsically hotter than the other parts of his surface. He justly remarked, that if this were true, it ought to follow that in the month of June, when the nodes of the solar equator pass through the earth, the upper and lower hemispheres should appear equally heated; and on the other hand, in the month of September, when the projection of the solar equator attained its greatest depression, the point of maximum temperature should fall *below* the centre of the disc. Experiments similar to those previously undertaken by him have served to confirm this view of the subject. "In the month of August the upper hemisphere appeared a little hotter than the

Downloaded from http://mnras.oxfordjournals.org/ by guest on August 15, 2015

© Royal Astronomical Society • Provided by the NASA Astrophysics Data System

1852MNRAS..13...11L

lower, but the differences, always very small, were not unfrequently negative. In September *the lower hemisphere appeared decidedly the hotter of the two.* The maximum difference rather exceeded 2° (by the galvanometer), being almost identical with the result obtained in the month of March *in the opposite direction.* Moreover, this maximum occurred from the 14th to the 16th September, which also corresponds with the epoch of the greatest depression of the solar equator."

Sig. Secchi remarks, that the influence of the solar spots upon the temperature is very striking. Sometimes a spot, which did not occupy more than $\frac{1}{100}$th of the aperture of the pile, caused the temperature to fall 3°, or about $\frac{1}{15}$th of the whole intensity. He found, however, by isolating the spot with a diaphragm, that it exercises a sensible influence even in the obscure part.

Extract of a Letter from Mr. Lassell.

"*Valetta, 1st Nov.* 1852.

"You will, I hope, have received a letter I wrote to you shortly after my arrival, giving you my first naked-eye impressions of this climate. I am now enabled to say that I find it quite as favourable for the use of the telescope as I had anticipated—incomparably more so than at Starfield, both in respect of quantity and quality of clear sky. My first observation through the telescope was on the 5th of last month, but it was not completed in respect of clock-motion and driving apparatus until the 16th, and on the 26th we were visited with a tremendous "*gregale*," which, beside causing some shipwrecks with loss of life in the harbour, and upsetting a whole battery of 24-pounders as if they had been ninepins, gave my roof a tremendous shake, and, partly dislodging it from the wall, would, I believe, have carried it quite away, if it had not "brought up" against the strong frame-work of the polar axis. Happily no injury was done to the telescope beyond crushing the tube of the finder, and that without injury to the optical part. This has lost me some eight or ten days; but all the mischief is now repaired, and since the 27th I have observed every night, the weather having settled again so as to be even finer than before the storm. The principal objects viewed are, as you may surmise, *Neptune*, *Uranus*, and *Saturn*, the last being an object of such surpassing interest as to absorb almost more than its share of attention. I send you herewith a careful drawing of its present appearance; and, if viewed through a blackened tube with one eye, at the distance of three or four feet, it presents so exact a fac-simile of the picture afforded by the 20-foot telescope and a power of 650 that I know not how to introduce a correction. I have compared it carefully with the telescopic image, by having it well illuminated and placed alongside the eye-piece, in order to form this estimation, and the only thing that suggests itself as a possible improvement of its accuracy, would be *a very slight* increase of breadth of the outer

Downloaded from http://mnras.oxfordjournals.org/ by guest on August 15, 2015

© Royal Astronomical Society • Provided by the NASA Astrophysics Data System